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Predictors of Depression among Workers at the Time of a Plant Closing

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Using an ecological theoretical perspective, this study of white male UAW workers stressed by a plant closing explored predictors of depression at multiple systems levels. The five best predictors of workers' depression were family strengths, age, economic strain, health, and social support. Additional bivariate predictors included self-esteem and having an alcohol problem at the individual level, marital status and family satisfaction at the family system level, and household income, home ownership, and key relationships at the social-environmental level. Implications for collaboration between direct-service and policy-practice social workers are discussed.

The ecological (person-in-environment) theoretical perspective (Germain & Gitterman, 1987; Meyer, 1983) logically positions social workers as key professionals in work with individuals and families stressed by changes in the U.S. economy, including unemployment related to continuing corporate down-sizing and the closing of manufacturing plants. However, social work research, theory-building, and practice model-building literatures in this area have so far been fairly limited. To continue to expand professional knowledge in this important area, the authors briefly overview current research findings, present results from a study of UAW (United Autoworkers union) workers stressed by a plant closing, and discuss implications for social work theory and practice strategies in addressing multilevel social systems interventions and change.

Previous Theory and Research

Over the past decade, social work professionals have contributed to emerging practice knowledge-building efforts regarding issues of unemployment and plant closings (Abramovitz, 1984; Beckett, 1988; Briar, 1980, 1983, 1988; Briar, Fiedler, Sheean & Kamps, 1980; Briar & Knighton, 1988; Donovan, Jaffe & Pirie, 1987; Jones, 1988, 1989, 1990, 1991a, 1991b, 1992; Macarov, 1988; Sherraden, 1985a, 1985b; Sunley & Sheek, 1986; Vosler, 1994, 1995; Wagner, 1991; Zippay, 1991). During the same decade, the social science literatures in this area—in psychology, family studies, economics and related fields—have expanded dramatically. However, important findings from these specific but often isolated empirical studies in somewhat specialized areas (e.g., labor economics, social psychology, or family sociology) are not always available in forms that are easily usable by social workers in direct practice roles. To begin to bridge this “gap” between research and practice, Vosler (1994) developed a model identifying a number of factors—at multiple social systems levels—that researchers have found are important in understanding impacts of an unemployment event on individual workers and their families. These key factors include (1) social-environmental resources available for re-employment and economic self-sufficiency, (2) family definitions, roles, support and functioning, and (3) individual health and mental health.

One of the recurring findings among many of the unemployment studies is a correlation between being laid off and depression (Briar, 1988; Gordus, Jarley & Ferman, 1981; Jones, 1991b; Liem & Liem, 1988; Perrucci, 1994; Perrucci, Perrucci, Targ & Targ, 1988; Zippay, 1991). In addition, the plant closing studies (in which it is highly unlikely that workers’ depression “caused” the plant to close) have found that this relationship appears to be causal—that is, unemployment can result in increased depression (see, for example, Kessler, Turner & House, 1987). Further, in a recent two-year longitudinal plant-closings study, Hamilton, Hoffman, Broman and Rauma (1993) found that not only did unemployment predict depression one year later, but also that depression one year after the plant-closings predicted unemployment at two-years post plant-closings. Such findings, combined

with continuing changes in employment and unemployment patterns in the U.S. (see Vosler, in press, for a review), indicate that it is increasingly important for social work professionals in a variety of settings to understand the importance of both clinical and prevention services to laid-off and unemployed workers. Effectively addressing depression will have not only short-term positive mental health consequences for the individual, but may also contribute to positive long-term individual and family outcomes related to the worker's re-employment prospects.

Thus, a more comprehensive understanding of critical assessment factors for work with a variety of workers stressed by unemployment and plant closings is needed. In order to contribute to this on-going knowledge-building effort, the specific research question that has guided the current study is: Among workers stressed by a plant closing, what are the best predictors of depression, at what systems levels?

Methodology

When an automobile manufacturing plant in a large midwestern city closed in the early 1990s, leaving more than 2500 members of the United Autoworkers (UAW) union unemployed, the authors, in cooperation with the UAW Regional office, initiated a study of workers affected by the plant closing. Based on the multi-level, multi-factor model developed by Vosler (1994) and on specific variables that previous research studies had found to be significantly associated with unemployment, the authors developed a survey questionnaire. Two months after the plant closing, 653 questionnaires were mailed to a 10% random sample of UAW workers from the plant that had closed and from an adjacent plant that was still operating.

Preliminary analysis of data from 206 respondents (a 32% response rate) indicated that workers from both plants were quite depressed and that their depression scores did not vary by plant. These early findings led the authors to focus on depression as the target variable and to combine data on workers from both plants for this study. The focus of the analyses was twofold. First, factors significantly associated with depression were identified, including specific variables at social-environmental, family, and individ-

ual levels. Second, factors were examined that emerged empirically as the best predictors of depression among these workers.

Sample

The sample for this analysis consisted of those workers who were living with at least one other person at the time of the plant closing. This group was selected because of the authors' interest in identifying predictors of depression at multiple social systems levels, including that of the family. In addition, the analysis is limited to white men because there were too few minorities and female respondents to assess the effects of race and gender on depression. Inclusion criteria resulted in a sub-sample of 147 workers who were affected by the plant closing, either directly through lay-off or indirectly through union and media publicity (e.g., there were some predictions that the second plant would soon be closed as well).

The typical respondent was a married 44-year-old with one or two children. He most likely had taken some college courses following graduation from high school, was a homeowner, and identified with a Protestant denomination. His wife was fairly likely to work on a part-time basis outside the home. He had worked about 19 years for the automobile manufacturing company.

Predictors of Depression at Three Systems Levels.

The workers responded to survey questions regarding *depression* (Bloom & Fischer, 1982; Hudson, 1982) as well as (a) *individual-level* demographic characteristics, health status, and self-esteem; (b) *family-level* demographics, satisfaction, and family strengths; and (c) *social-environmental* demographic characteristics, economic strain, and social support (see Table 1).

Target variable: Depression. Scores on the Generalized Contentment Scale (GCS: Bloom & Fischer, 1982; Hudson, 1982) were used to measure depression among sample workers. Utilizing a 5-point response format, the scale includes 25 items, asking about the respondent's experience of various feelings and behaviors indicative of depression. Score values on this scale can range from 0 to 100, with higher scores indicating the presence of depression. When used in clinical settings, persons who have a score of 30

Table 1.

Social, Family, and Individual Level Variables: Associations with Depression

Variable	r ^a	Significance ^b
SOCIAL		
Plant Closed		NS
Household Income	-.219	.008
Home Ownership	-.197	.017
Economic Strain	.479	.000
Key Relationships	-.478	.000
Social Support	-.388	.000
Religious Community		NS
FAMILY		
Marital Status	-.230	.005
Number of Children		NS
Number in Household		NS
Spouse Employment		NS
Family Satisfaction	-.398	.000
Family Strengths	-.695	.000
Family Health		NS
INDIVIDUAL		
Age	-.332	.000
Education		NS
Military Experience		NS
Seniority at Work		NS
Alcohol Problem	.230	.005
Health Status	-.421	.000
Self Esteem	-.680	.000

^a Pearson Correlation Coefficients.

^b NS = Not Significant.

or more on the GCS have been found to have problems with depression (Bloom & Fischer, 1982). In this sample, scores on the depression scale ranged from 0 to 76, with a mean score of 29.67 and a standard deviation of 15.77. Forty-nine percent of the sample scores fell in the clinical range (> 30).

Individual Level Predictors of Depression. Seven measures of individual-level factors were tested for their association with depression. These included the workers' age, education, overall health, problematic alcohol use, self-esteem, military experience, and seniority at the time of the plant closing. The mean and median age of the workers was 44 years, with a standard deviation of 7.27. In terms of education, 24 percent of the workers had not completed high school, 33 percent had a high school diploma, and 43 percent had attended or completed college.

Two measures of health status were used. Overall health status was determined on the basis of each worker's answer to the question, "How would you rate your overall health?" Most of the workers rated their overall health either good (53.7%) or excellent (23.8%), but a substantial group believed their health to be fair (19.7%) or poor (2.7%). To identify the rate of problematic alcohol use, the four CAGE questions suggested by Ewing and Rouse (1970) were used as a clinical tool for identifying alcoholism. For the purposes of this analysis, affirmative answers to two of the four questions about the worker's own drinking behaviors were indicative of problems with alcohol (see Ewing, 1984). On the basis of the CAGE questions, it was found that 21 (14.3%) of the workers in the sample used alcohol in a problematic manner.

This study's measure of self-esteem was originally developed by Rosenberg (1965) and was used by Pearlin, Lieberman, Menaghan, and Mullan (1981). This self-esteem measure is a ten item scale indicating judgments that respondents make regarding their own self-worth. Respondents were given the opportunity to report whether they strongly agreed, agreed, disagreed, or strongly disagreed with each of the ten items. Summary scores for the scale can range from 10 to 40, with lower scores indicating lower self-esteem. The self-esteem scores of the workers in this study ranged from 16 to 40, with a mean of 33.62 and a standard deviation of 5.30.

In terms of work history for the individuals in the sample, the impact of both military experience and seniority with the auto-maker at the time of the plant closing were evaluated. In this sample, 37.4 percent of the workers had previous military experience. The number of years that respondents had worked for the parent corporation of the two automobile manufacturing

plants ranged from 4 to 29, with a mean of 19.46 and a standard deviation of 5.63 years of seniority at the time of the plant closing.

Family Level Predictors of Depression. Seven family factors were examined in terms of their impact on the workers' depression. These included marital status, number of children, household composition, wife's employment status, family members' health problems, family satisfaction, and family strengths. Most of the workers in the sample were married (87 percent) and had children living at home (68 percent) at the time of the plant closing. Among those workers who had children at home, the number of children ranged from 1 to 5, with a mean of 1.87 and a standard deviation of .939. The workers' households typically included four members, with the number of household members ranging from two to seven. About half of the men (51 percent) had spouses or partners who were employed outside the home.

Workers were asked to subjectively assess major health problems for members of their families. The presence of family health problems was determined on the basis of the worker's answer to the question, "Do any other family members (NOT including yourself) have a major health problem?" Twenty-eight percent of the respondents reported that they had a family member with a major health problem.

Family satisfaction was measured on the basis of the Kansas Family Life Satisfaction Scale developed by Schumm and his colleagues (Schumm, Paff-Bergen, Hatch, Obiorah, Copeland, Meens & Bughaighis, 1986). A 5-point response format is used, with responses ranging from very dissatisfied to very satisfied. Responses to the three scale items asking about workers' satisfaction with family life were summed to arrive at the family life satisfaction score. Possible scores range from three to fifteen, with higher scores indicating higher family satisfaction. The scores of workers in the sample ranged from 3 to 15, with a mean score of 11.86 and a standard deviation of 3.06.

The measure of family strengths used in this study was developed by Olson and his colleagues (Olson, McCubbin, Barnes, Larsen, Muxen & Wilson, 1982) with a four-point response format utilized by Voydanoff and Donnelly (1988). The 12 items included in the scale are family characteristics that help some families manage change successfully. Respondents were asked whether

they strongly agreed, agreed, disagreed, or strongly disagreed that their families exhibited each of the characteristics. Family strengths scores were determined by summing the responses for each worker in the sample. Possible scores range from 12 to 48, with higher scores indicating higher levels of family strengths. For this study, family strength scores ranged from 13 to 48, with a mean of 35.01 and a standard deviation of 6.24.

Social-Environmental Level Predictors of Depression. Seven larger social system variables were tested for their association with depression, beginning with the plant at which the worker had been or was employed. In addition, the larger social system level predictors included household income, home ownership status, economic strain, the quality of key relationships, social support, and identification with a religious community. The group was nearly equally divided between those workers whose plant had closed (51 percent) and those whose plant had remained open. The workers' annual household income for 1990 (the year prior to the plant closing) ranged from \$10,000 to \$75,000, with a mean of \$40,900. Most of the workers either wholly owned (18 percent) or were in the process of buying (74 percent) a home, with the remaining percent renting or living in someone else's home.

Economic strain was measured by asking respondents whether they could afford food, clothing, housing, furniture, a car, and leisure activities; whether they had difficulty paying their bills; and whether they had money left over at the end of the month. This measure of economic strain was originally suggested by Pearlin et al. (1981) and was used in modified form by Perrucci et al. (1988). In the present study, economic strain is a summary score of responses to the eight items; the higher the score the more economic strain the worker reported experiencing. For this sample, economic strain scores ranged from 0 to 8 with a mean score of 2.45 and a standard deviation of .31.

The quality of key relationships was measured on the basis of the worker's assessments of his relationship with his spouse, his children, other family members, and friends during the past six months. Respondents were asked whether they rated each of these relationships as very good, somewhat good, somewhat bad, or very bad. Key relationship scores were determined by summing the responses from each worker in the sample. Possible

scores range from 4 to 16, with higher scores indicating better relationships with key family members and friends. For this sample, key relationship scores ranged from 6 to 16, with a mean of 12.87 and a standard deviation of 2.68.

The measure of social support used in this study was originally developed by Pearlin and his colleagues (1981) and focuses on emotional support. Respondents were asked, "Among your friends and relatives, excluding your wife, is there someone you feel you can tell just about anything to, someone you can count on for understanding and advice?" In addition, if a married worker indicated, in response to a second question, that he could talk to his spouse about important things, then his score was increased by 1 point. For this study sample, social support scores ranged from 0 to 3, with a mean of 1.89 and a standard deviation of .97.

Identification with a religious community was measured by workers' response to a single question, "What is your religious preference?" If the respondent identified a religious community, a score of 1 was given; otherwise, the score was 0. For this study sample, 79.6% indicated identification with a religious community.

Findings

Bivariate Relationships

Bivariate relationships between depression and individual level, family level, and social-environmental level variables were examined. The Pearson product moment correlation coefficients reported in Table 1 indicate that 4 of the 7 individual-level variables, 3 of the 7 family-level variables, and 5 of the 7 social-environmental (larger social systems) level variables were associated with depression at a statistically significant level ($p < .05$).

Individual variables. The individual variable most strongly correlated with depression was self-esteem ($r = -.680$); the higher the self-esteem, the lower the depression score. The other individual level variables that were significantly correlated with depression at the bivariate level included health status ($r = -.421$); age ($r = -.332$); and alcohol problem ($r = .230$). Education, previous military experience, and seniority at work were not associated significantly with depression.

Family variables. Scores on the family strengths scale were most strongly correlated with depression among the family level variables ($r = -.695$). Family satisfaction was also significantly and negatively associated with depression at the bivariate level ($r = -.398$), as was being married ($r = -.230$). The family variables that were not correlated with depression at a statistically significant level included number of children, total number in the household, wife's employment status, and the health status of family members.

Social-environmental variables. In terms of the larger social systems level, economic strain ($r = .479$) and the quality of key relationships ($r = -.478$) had the strongest associations with depression. Social support was also significantly correlated with depression ($r = -.388$), as were household income ($r = -.219$) and home ownership ($r = -.197$). Variables at this level that did not have a significant association with depression included whether or not one's plant closed or remained opened, and whether or not one identified with a religious community.

Summary. A total of 12 variables were significantly associated with depression at the bivariate level. These included factors at all three system levels: the individual, the family, and the larger social system.

Multivariate Analysis

After identifying the twelve variables that were significantly related to depression at the bivariate level, the question to be addressed was which of these factors at which system levels best predicted depression in multivariate analyses. Conceptual overlap issues were identified, and multicollinearity problems emerged when the correlations between predictor variables (see Table 2) were examined. Key relationships could not be used in multivariate analysis with either marital status or the Kansas Family Life Satisfaction Scale. In addition, self-esteem and family strengths could not be used together.

While avoiding equations with multicollinearity problems, combinations of variables were tested to ascertain which combinations explained the most variance in the target variable of depression. The resulting model, shown in Figure 1, indicates that five variables—age, health, family strengths, economic strain, and social support—explained 61 percent of the variance in depres-

Table 2.
Correlation Matrix of Variables Significantly Associated with Depression

	HH Income	Own Home	Econ Strain	Key Relate	Social Support	Marital Status	Family Satisfac	Family Strength	Age	Alcohol Problem	Health Status
SOCIAL											
Household Income											
Home Ownership	.022										
Economic Strain	-.347***	-.122									
Key Relationships	.239**	.096	-.214**								
Social Support	.255**	.106	-.214**	.335***							
FAMILY											
Marital Status	.334***	.114	-.141	.512***	.167*						
Family Satisfaction	.119	-.032	-.153	.609***	.234**	.541***					
Family Strengths	.138	.013	-.355***	.435***	.311***	.138	.479***				
INDIVIDUAL											
Age	-.017	.318***	-.141	.189*	.090	.129	.106	.214**			
Alcohol Problem	-.050	-.156	.151	-.111	-.196*	-.190*	-.052	-.117	-.094		
Health Status	.178*	-.015	-.339***	.268**	.295***	.158	.211*	.314***	-.038	-.203*	
Self-Esteem	.223**	.027	-.346***	.286***	.166*	.091	.319***	.491***	.127	-.107	.315***

*p < .05, **p < .01, ***p < .001

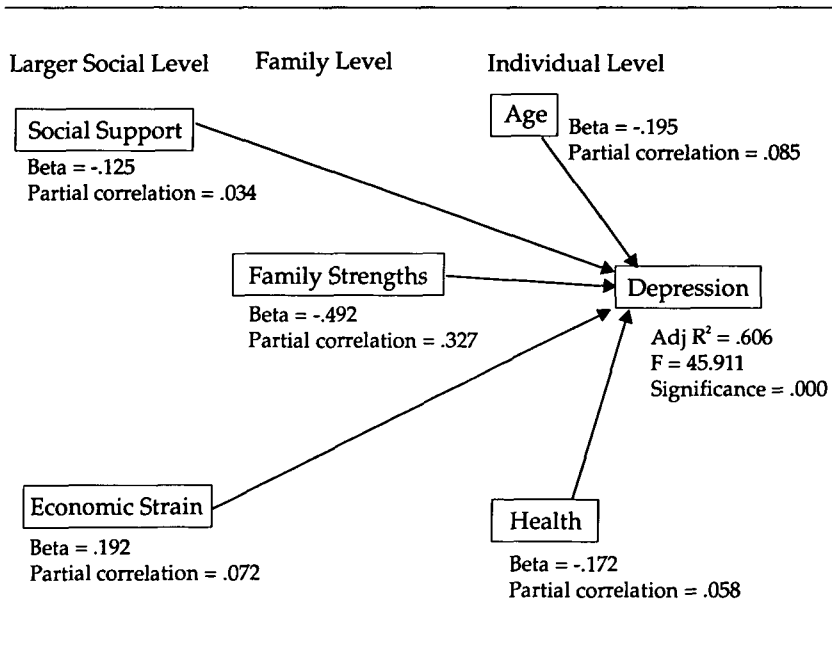
sion for workers in this sample ($F = 45.91, p = .0001, \text{Adj}R^2 = .6060$). Further, the standardized parameter estimates indicate that the family and social-environmental level variables together are better predictors of depression than those at the individual level. Family strengths was the best predictor, followed by age, economic strain, health status, and social support. These five variables explained sixty-one percent of the variance in depression among the workers in this sample. In addition, the partial correlation coefficients indicate that each of these five variables has a direct effect on depression, controlling for all other variables in the model.

Discussion

Limitations of this study must be taken into consideration when examining these results. First, the sample is taken from one

Figure 1.

Multivariate Best Predictors of Depression among Workers at the Time of a Plant Closing



union and two auto manufacturing plants in a specific midwestern city, the response rate was not high, and this study focuses on white male respondents with families. Thus, the results are not generalizable to other populations, industries, or locations. However, study findings can be used to guide replication and further exploratory studies. In addition, the use of mailed questionnaires alone does not provide the opportunity to examine possible self-report bias; and data collection at only one point in time limits the ability to empirically establish direction of correlational relationships. On the other hand, given limited funding and the exploratory nature of this study, the methods used are appropriate for the research question examined.

The findings provide empirical support for the use of a multilevel social systems practice model in the assessment of the needs of workers stressed by plant closings (Vosler, *in press*). Overall, the finding that workers at both plants were experiencing heightened levels of depressive symptoms—with nearly half of respondents' scores falling in the clinical range—calls attention to the importance of including mental health screenings in a full assessment of stressed workers' needs, and to the importance of ensuring that mental health services are part of employment and re-employment transition support programs and strategies.

Findings in Table 1 and Figure 1 alert practitioners to key factors for exploration with clients, not only at the individual level but also at family and social-environmental levels of functioning. Given previous findings that manufacturing workers may be reluctant to utilize traditional mental health services because of stigma associated with mental illness (Buss & Redburn, 1983), social work practitioners with multilevel assessment skills may be in an ideal position to assist distressed workers in identifying depressive symptoms in the context of more "socially acceptable" factors such as family difficulties and economic strain.

The individual-level findings from this study indicate that younger workers may be at increased risk for depression, a finding that is supported by previous research (Mirowsky & Ross, 1989; see also Bromberger & Costello, 1992). Other individual-level risk factors include lower self-esteem, use of alcohol in a problematic way, and other health problems.

The finding that family strengths is the strongest predictor of lower levels of depression in the multivariate environment (Fig-

ure 1) highlights the importance of assessment and intervention strategies that include the worker's family. In addition, findings at the bivariate level indicate that being currently married and experiencing satisfaction with family relationships may help workers cope with stress from plant closings and the threat of unemployment. Social work practitioners may be in a unique position to plan and provide services in the community or through the union that strengthen family functioning, and that both directly and indirectly lessen the risk of depression for workers.

At the social-environmental level, both economic and social support resources are important predictors of depression among these union workers stressed by a plant closing. Social support and positive relationships outside the family (Table 1) can help workers and their families cope with stress from plant closings and employment transitions. In this process, direct-service and policy-practice social workers have important roles to play in developing and enhancing families' community and larger-system connections and relationships (Briar, 1988; Sunley & Sheek, 1986).

Both Table 1 and Figure 1 identify economic strain as a key risk factor in understanding workers' depression. Other important economic factors include household income and home ownership (Table 1). Social work policy practitioners have key roles to play in work with companies, unions, agencies and communities, and with legislators, politicians and others at local, state and national levels (Figueira-McDonough, 1993; Googins & Davidson, 1993; Root, 1995; Vosler, 1994, in press; Wagner, 1991). The goal of this work is to ensure stable access to basic economic resources—as well as the development and preservation of key assets (such as home ownership; see Sherraden, 1991)—through adequate social structures, policies and programs.

Implications and Conclusions

Findings from this exploratory study of UAW workers stressed by a plant closing highlight the importance of social work theory-building and research efforts that connect micro- and macro-practice assessments and interventions, particularly for populations affected by macro-level issues and changes such as unemployment and plant closings. Social workers' person-in-environment theoretical perspective—linked to multilevel social

systems thinking—provides a framework for assessing stressors not only at individual but also at family and larger systems levels. Emerging assessment tools for understanding these social stressors include the P.I.E. (person-in-environment) system (Karls & Wandrei, 1992), the FABR (Family Access to Basic Resources; Vosler, 1990), and other scales and measures focusing on the family and larger social systems (Vosler, in press).

Traditional mental health assessments and treatment approaches have tended to focus almost exclusively on the individual. On the other hand, more community- and family-focused approaches may tend to overlook the importance of assessing and addressing mental health risks, such as depression. Social work research and theory focusing on key risk and resource factors are increasingly documenting the importance of understanding *both* individuals *and* families in larger social systems for effective professional practice.

It may often be difficult for direct-service practitioners to imagine or have time to think about participating in planning interventions at larger system levels that could help to alleviate or prevent stress for individual clients and their families. Similarly, it may be difficult for policy-level practitioners to imagine and build in feedback from direct-service workers and clients concerning specific risks and the effectiveness of policies and programs at more macro levels. However, with continuing changes in the U.S. economy, collaboration among social work practitioners at multiple systems levels is increasingly imperative. Such collaborative efforts are needed in order to develop effective policies, programs and services that ensure critically needed economic and social resources for workers and their families stressed by unemployment, plant closings, downsizings and employment transitions in an increasingly global economy.

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